

FORM PTO-1390  
(REV. 1-98)

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

TRANSMITTAL LETTER TO THE UNITED STATES  
DESIGNATED/ELECTED OFFICE (DO/EO/US)  
CONCERNING A FILING UNDER 35 U.S.C. 371

ATTORNEY'S DOCKET NUMBER

8013-1013

U.S. APPLICATION NO. (If known, see 37 CFR 1.5

10/049236

INTERNATIONAL APPLICATION NO.  
PCT/JP00/03263

INTERNATIONAL FILING DATE  
May 22, 2000

PRIORITY DATE CLAIMED  
August 11, 1999

TITLE OF INVENTION CREAMY ICE CREAM PRODUCTS CONTAINING SOY-MILK AND POTATO  
AS THE MAIN COMPONENTS AND PROCESS FOR PRODUCING THE SAME

APPLICANT(S) FOR DO/EO/US  
Hideharu TANAKA

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a FIRST submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
  - a. ☒ is transmitted herewith (required only if not transmitted by the International Bureau).
  - b. ☐ has been transmitted by the International Bureau.
  - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ☐ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
  - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
  - b. ☐ have been transmitted by the International Bureau.
  - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
  - d. ☐ have not been made and will not be made.
8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371 (c)(3)).
9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10. ☐ A translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 16. below concern document(s) or information included:

11. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☒ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☒ A FIRST preliminary amendment.  
☐ A SECOND or SUBSEQUENT preliminary amendment.
14. ☐ A substitute specification.
15. ☐ A change of power of attorney and/or address letter.
16. ☒ Other items or information:

International Preliminary Examination Report.

Abstract.

Search Report.

Application Data Sheet.

U.S. APPLICATION NO. <b>10/049236</b>		INTERNATIONAL APPLICATION NO. <b>PCT/JP00/03263</b>		ATTORNEY'S DOCKET NUMBER <b>8013-1013</b>	
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<b>17. <input checked="" type="checkbox"/> The following fees are submitted:</b> <b>BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)):</b> Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO ..... \$1,040.  International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO ..... 890.  International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO ..... 740.  International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) ..... 710.  International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4) ..... 100.  <b>ENTER APPROPRIATE BASIC FEE AMOUNT =</b>				<b>CALCULATIONS PTO USE ONLY</b>          <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%; text-align: right;">\$ 890</td> <td style="width:50%;"></td> </tr> </table>		\$ 890	
\$ 890							

  

Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(e)).				\$	
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CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	\$	
Total claims	23 - 20 =	3	x \$ 18.	\$ 54	
Independent claims	2 - 3 =	0	x 84.	\$ 0	
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ 280.	\$	
<b>TOTAL OF ABOVE CALCULATIONS =</b>				\$ 944	
Reduction of 1/2 for small entity				\$ 472	
<b>SUBTOTAL =</b>				\$ 472	
Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(f)).				\$	
<b>TOTAL NATIONAL FEE =</b>				\$ 472	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property +				\$ 40	
<b>TOTAL FEES ENCLOSED =</b>				\$ 512	
				Amount to be refunded:	\$
				charged:	\$

  

a. ☒ A check in the amount of \$ 512 to cover the above fees is enclosed.

b. ☐ Please charge my Deposit Account No. \_\_\_\_\_ in the amount of \$ \_\_\_\_\_ to cover the above fees.  
 A duplicate copy of this sheet is enclosed.

c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required by  
 37 CFR 1.16 and 1.17, or credit any overpayment to Deposit Account No. 25-0120. A duplicate  
 copy of this sheet is enclosed.

  

**NOTE:** Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR  
 1.137 (a) or (b)) must be filed and granted to restore the application to pending status.

February 11, 2002

SEND ALL CORRESPONDENCE TO:

Young & Thompson 745 South 23rd Street 2nd Floor Arlington, VA 22202 (703) 521-2297	<b>CUSTOMER NO. 000466</b>	<div style="text-align: center;"> </div> <div style="border-top: 1px solid black; padding-top: 2px;">             Benoit Castel           </div> <div style="border-top: 1px solid black; padding-top: 2px;">             35,041           </div>
		SIGNATURE  NAME  REGISTRATION NUMBER

10/049236

J013 Rec'd PCT/PTO 11 FEB 2002

PATENTS

#4/a

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Hideharu TANAKA

Serial No. (unknown)

Filed herewith

CREAMY ICE CREAM PRODUCTS  
CONTAINING SOY-MILK AND POTATO  
AS THE MAIN COMPONENTS AND  
PROCESS FOR PRODUCING THE SAME

PRELIMINARY AMENDMENT

Commissioner of Patents

Washington, D.C. 20231

Sir:

Prior to calculation of the filing fee, please amend  
the above-identified application as follows:

IN THE CLAIMS:

Amend claim 22 as follows:

22. (amended) Ice creams according to claim 1,  
where milk at a volume according to the ice cream merchandise  
standards is used as a mix material.

Amend claim 23 as follows:

23. (amended) A method for producing ice creams  
according to claim 12, where milk at a volume according to the  
ice cream merchandise standards is used as a mix material.

R E M A R K S

Attached hereto is a marked-up version of the  
changes made to the claims by the current amendment. The

Hideharu TANAKA

attached page is captioned "VERSION WITH MARKINGS TO SHOW  
CHANGES MADE".

Respectfully submitted,

YOUNG & THOMPSON

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February 11, 2002

VERSION WITH MARKINGS TO SHOW CHANGES MADE

22. Ice creams according to ~~claims 1 to 11~~ claim 1, where milk at a volume according to the ice cream merchandise standards is used as a mix material.

23. A method for producing ice creams according to ~~claims 12 to 21~~ claim 12, where milk at a volume according to the ice cream merchandise standards is used as a mix material.

## DESCRIPTION

Creamy ice cream products containing Soy-milk and potato as the main components and process for producing the same

### Technical Field

The present invention relates to ice creams and a method for producing the same. More specifically, the invention relates to creamy ice creams from soymilk and potatoes as the main raw materials, with absolute no use of dairy products, and a method for producing the same.

### Background of the Invention

Ice cream widely ingested as one representative of ice creams contains dairy products according to the merchandise standards and can retain a creamy texture via the content of dairy products. Various types of ice cream have been available, and attention is now focused on ice creams using soybean. The content of soybean therein enables the intake of nutritious elements never ingested from dairy products, for example lecithin, calcium, potassium, vitamin B1, vitamin B2, iron, protein and isoflavone, so that the resulting ice creams are suitable for current health-conscious need.

Dairy products or chemical auxiliaries have been essential for ice creams using soybean. In case of no content of dairy products, delicious ice creams with a creamy texture

but without soybean odor have never been produced. Even in case of ice creams using soybean, the ice creams have merely soybean odor and a hard sandy rough texture, when the ice creams contain no dairy products or chemical auxiliaries. Because of such reasons, the content of dairy products or chemical auxiliaries for food, such as emulsifiers, has been the state of the art.

However, the content of dairy products or chemical auxiliaries causes the following problems. In other words, persons in delicate health or with milk allergy could not eat delicious ice creams with addition of dairy products or chemical auxiliaries.

It is a purpose of the invention to provide ice creams with a creamy texture like ice cream but without any soybean odor, by using soybean, absolutely without use of dairy products or chemical auxiliaries, so persons incapable of ingesting previous ice creams with addition of dairy products or chemical auxiliaries due to their delicate health or milk allergy can ingest the resulting ice creams.

#### Disclosure of the Invention

The invention provides novel ice creams containing soymilk and at least one species of potatoes as the essential main products. The content of at least one species of potatoes as one of the main products enabled the achievement of a smooth and creamy texture like ice cream in the absence of any soybean

odor.

With absolutely no use of dairy products or chemical auxiliaries for food, such as emulsifiers, novel ice creams tasting smooth and creamy and having a taste and a flavor totally without any soybean odor, like ice cream, can be recovered from the main raw materials soybean and potatoes. Owing to absolutely no use of dairy products or chemical auxiliaries such as emulsifiers, the resulting novel ice creams of the invention can be ingested even by persons with milk allergy or in delicate health, who could never taste ice cream. Additionally because of no use of rice, persons with rice allergy can ingest the novel ice creams of the invention.

#### Best Mode for Carrying out the Invention

The mode for carrying out the invention will be described in detail.

The invention provides novel ice creams with a taste and a flavor like the taste of ice cream, which can be produced from the main raw materials soybean and potatoes, with totally no use of dairy products or chemical auxiliaries for food, such as emulsifiers.

The novel ice creams contain soymilk and at least one species of potatoes as the essential main products.

In case that soymilk and a sweetener are contained as the main products, a smooth and creamy texture like ice cream



can never be generated even if the crunching texture of sherbet can be yielded. Meanwhile, the content of at least one species of potatoes as one of the main products enabled the recovery of a smooth and creamy texture like ice cream.

Specific content ratios of the main products on a dry weight basis are 10 to 21 parts by weight of soymilk, 5 to 12.5 parts by weight of potatoes and 50 to 70 parts by weight of a sweetener, provided that the total solid content in the ice creams is defined 100 parts by weight.

As the potatoes, for example, sweet potato is preferable with no specific limitation. For example, Japanese yam and taro may satisfactorily be contained therein. Thermal treatment of sweet potato yields a spontaneous emulsifying effect due to the starch.

As the sweetener, various naturally occurring or artificial sweeteners can be used. Oligosaccharide may be used as a preferable sweetener. In case of oligosaccharide is used, heating and agitation can decompose the sugar chain to increase the amount of dextrin, which incorporates substances causing soybean odor, thereby reducing effectively the fresh green odor of soymilk.

Further, at least one species of apple may satisfactorily be contained, together with potatoes such as sweet potato. Provided that the total solid content in the ice creams on a dry weight basis is defined 100 parts by weight, in this case,

the following composition is the most preferable: soymilk at 10 to 21 parts by weight, sweet potato at 5 to 12.5 parts by weight, apple at one to 2 parts by weight and oligosaccharide at 20 to 40 parts by weight. Still further, the composition with the solid content in soymilk being about 14 to 15 parts by weight is the most preferable. The most preferable is the composition with oligosaccharide at 30 to 35 parts by weight.

By mixing apple together with potatoes such as sweet potato into other mix materials, to adjust the total solid content in the ice creams content to preferably 25 % to 34 %, more preferably 28 % to 31 %, a smooth and creamy texture like ice cream can be recovered, which has never been attained previously.

In case that rice is used instead of potatoes, a problem occurs such that the resulting product is not suitable for persons with rice allergy. In case that potatoes such as sweet potato are used, as in the present invention, even persons with rice allergy can ingest the resulting ice creams, while potatoes are healthy foodstuffs abundant in dietary fiber. As described above, further, potatoes, particularly sweet potato when heated exert a spontaneous emulsifying action due to the starch, so that a smooth and creamy texture like ice cream can be recovered.

More preferably, addition of additives from at least one species of fruit with sour taste as a raw material allows the exertion of the masking effect of soybean odor. For example,

100 % Japanese apricot juice, lemon and apple may satisfactorily be used. Heating of the acids contained in such fruit along with soymilk causes protein modification, leading to the exertion of an emulsifying effect.

Other mix materials further include beet granulated sugar, isomerized sugar, apple pectin, coral, sesame seed oil or rapeseed oil.

Additionally, addition of antioxidants in vegetables or cereals, such as SOD or peptide or amino acid from fishes may possibly render the exertion of an effect as a so-called functional food.

Still further, the sweetener may satisfactorily be a naturally occurring or artificial sweetener with high calories, but a low-calorie sweetener such as momordicae fructus may also be used. As described above, the ice creams of the invention never contain any dairy product, so the ice creams are free of milk fat and with low calories.

Further, appropriate use of various vegetables such as sweet potato or ground green tea or cocoa or vanilla essence from natural origins permits the enjoyable taste of various flavors.

In accordance with the invention, thus, novel ice creams tasting smooth and creamy and having a taste and a flavor with no soybean odor like ice cream can be recovered from the raw materials soybean and potatoes, with absolutely no use of dairy

products or chemical auxiliaries for food, such as emulsifiers. Owing to absolutely no use of dairy products or chemical auxiliaries such as emulsifiers, the resulting novel ice creams of the invention can be ingested even by persons with milk allergy or in delicate health, who could never taste ice cream. Additionally because of no use of rice, persons with rice allergy can ingest the novel ice creams of the invention.

As described above, further, all the materials used are beneficial for human bodies, so the smoothness and creamy texture is comparable to the previous ice cream as a dairy product. Still further, nutritious elements never ingested from dairy products, for example lecithin, calcium, potassium, vitamin B1, vitamin B2, iron, protein and isoflavone can be ingested from the resulting ice creams, so the ice creams are suitable for the current health-conscious need.

Still further, the invention provides a method for producing novel ice creams with a taste and a flavor like ice cream from the main raw materials soybean and potatoes, with totally no use of dairy products or chemical auxiliaries for food, such as emulsifiers.

For the method for producing the novel ice creams of the invention, the following steps are essential steps, while the other steps may appropriately be modified so as to create the intended flavor.

Specifically, the method for producing the novel ice

creams of the invention includes as the essential steps, a step of purifying soymilk by squeezing or filtering out soybean juice, a step of kneading at least one species of potato powder with the solid of the soymilk for thermal treatment, a step of adding a sweetener and mix materials to the resulting mixture for heating and agitation and subsequently cooling and freezing the mixture.

For the reduction of soybean odor, preferably, soybean is boiled until water slops over or soybean is cooked without grinding to a fine size in water containing electrolytes or in alcohol and water; then, the juice is squeezed at a low pressure.

More preferably, sweet potato powder is used as at least one species of potato powder, while oligosaccharide is used as the sweetener. Sweet potato is preferable with no specific limitation. For example, Japanese yam and taro may satisfactorily be used. Sweet potato has the masking effect of soybean odor, while heating of sweet potato allows the exertion of a spontaneous emulsifying effect due to the starch.

As the sweetener, various naturally occurring or artificial sweeteners can be used. Oligosaccharide may be used as a preferable sweetener. In case of oligosaccharide is used, the sugar chain is decomposed via heating and agitation to increase the amount of dextrin, which incorporates substances causing soybean odor, thereby reducing effectively the fresh green odor of soymilk.

Further, at least one species of apple may satisfactorily be kneaded together with potatoes such as sweet potato into the solid of the soymilk, and in this case, blend ratios to the total solid of the ice creams on a dry weight basis are preferably 10 to 21 % for soymilk, 5 to 12.5 % for sweet potato powder, 1 to 2 % of apple powder, and 20 to 40 % of oligosaccharide. Further, the composition at a solid content of soymilk being about 11 % is the most preferable. The composition of an oligosaccharide content of 30 to 35 % is the most preferable.

The heating and agitation step after the addition of oligosaccharide as the sweetener is continued until the sugar chain is decomposed to increase the quantity of dextrin to incorporate the molecules causing soybean odor. The effect can be procured under heating for example at 68 °C for 30 minutes.

By mixing apple together with potatoes such as sweet potato into the other mix materials, to a final solid ice creams content in the total ice creams, preferably up to 25 % to 34 %, more preferably up to 28 % to 31 %, a smooth and creamy texture like ice cream can be brought about, which has never been realized yet.

Still more preferably, addition of an additive from at least one species of fruit with sourness as a raw material allows the exertion of the masking effect of soybean odor. For example, appropriate volumes of 100 % Japanese apricot juice, lemon and apple may satisfactorily be used. Heating of the acids

contained in such fruit along with soymilk causes protein modification, leading to the exertion of an emulsifying effect. For example, the emulsifying effect can be exerted by heating at a temperature of 68 °C for 30 minutes.

As other mix materials, further, appropriate amounts of beet granulated sugar, isomerized sugar, apple pectin, coral, vegetable oil such as sesame seed oil, rapeseed oil or perilla oil is used. For example, isomerized sugar at 10 % to 15 %, apple pectin at 0.02 % to 0.05 %, coral at 0.2 % to 0.5 %, vegetable oil such as sesame seed oil, rapeseed oil or perilla oil at 0.4 % to 1.2 % are exemplified for use.

Additionally, addition of antioxidants, for example SOD, of vegetables or cereals including soybean and germ, or peptide or amino acid from fishes may possibly permit the exertion of an effect as a so-called functional food. The added level is exemplified as 0.08 % to 2 %.

Still further, the sweetener may satisfactorily be a naturally occurring or artificial sweetener with high calories, but a low-calorie sweetener such as momordicae fructus may also be used. As described above, the ice creams of the invention absolutely never contain any dairy product, so the ice creams are free of milk fat and with low calories. The level of momordicae fructus to be added is exemplified as 2 % to 5 %.

Further, appropriate use of various vegetables such as various vegetables such as sweet potato or ground green tea or

cocoa or vanilla essence from natural origins allows the enjoyable taste of various flavors.

In accordance with the invention, thus, novel ice creams with a taste and a flavor without any soybean odor and with a smooth and creamy texture like ice cream can be recovered from the raw materials soybean and potatoes, with absolutely no use of dairy products or chemical auxiliaries for food, such as emulsifiers. Owing to the absolutely no use of dairy products or chemical auxiliaries such as emulsifiers, the resulting novel ice creams of the invention can be ingested even by persons with milk allergy or in delicate health, who could never taste ice cream. Additionally because of no use of rice, persons with rice allergy can ingest the novel ice creams of the invention.

Herein, milk may satisfactorily be used so as to satisfy the taste of consumers. In this case, ice cream products are produced, when the milk solid content is 15.0 % or more and the milk fat content is 8.0 % or more, while ice milk products are produced when the milk solid content is 10.0 % or more and the milk fat content is 3.0 % or more; and lacto-ice products are produced when the milk solid content is 3.0 % or more.

As described above, all the materials used are beneficial for human bodies, so the smooth and creamy profile is comparable to the previous ice cream as a dairy product; additionally, nutritious elements never ingestible from dairy products, for example lecithin, calcium, potassium, vitamin B1, vitamin B2,



iron, protein and isoflavone can be ingested, so that the resulting ice creams are suitable for the current health-conscious need.

#### Examples

One example of the composition of the ice creams of the invention is described below.

Provided that the total solid of the ice creams is defined 100 parts by weight, content ratios in a specific product are shown on a dry weight basis.

Total solid content in the ice creams: 29.0 parts by weight:

soymilk (solid product): 4.66 parts by weight;

sweet potato: 3.46 parts by weight;

oligosaccharide: 8.86 parts by weight;

apple: one part by weight;

additive from a raw material sour fruit (lemon): 0.02 part by weight;

isomerized sugar: 10.1 parts by weight;

apple pectin: 0.07 part by weight;

coral: 0.38 part by weight;

sesame seed oil: 0.58 part by weight;

vanilla essence: 0.05 part by weight.

One example of the specific method for producing the ice creams of the aforementioned composition will be described

below.

After soybean was soaked in water for about 6 hours, soybean was boiled in water of a volume about 5-fold the volume of soybean at a temperature of 80 °C for 10 minutes until water slopped over, and then, lye was removed. The process was carried out twice in total, to remove fresh green odor of soybean. Additional water was charged while the temperature was elevated to about 80 °C; after grinding, juice with reduced fresh green odor was squeezed out at a pressure about half of general pressure, namely 100 kg/m<sup>2</sup>, so that soymilk was thereby recovered. Herein, the solid concentration in the squeezed soymilk juice is preferably 9 to 14 %, more preferably about 11 %. Further, the fresh green odor of the soymilk herein recovered was reduced to 70 % to 80 % of that of previous soymilk.

In place of the method, further, soymilk can be recovered by grinding soybean after allowing water to slop over to remove lye and subsequently supplementing water for boiling and filtration.

By an alternative method, domestic soybean is used in case of grinding soybean for subsequent boiling, to recover squeezed juice with reduced fresh green odor at 100 kg/m<sup>2</sup> about half of general pressure and thereby recover soymilk.

Into the solid content of the soymilk are kneaded sweet potato powder in a dry state at 3.46 %, apple powder at 1 %, oligosaccharide at 8.86 %, lemon at 0.02 %, isomerized sugar

at 10.1 %, apple pectin at 0.07 %, coral at 0.38 %, sesame seed oil at 0.58 % and a flavor vanilla essence at 0.05 %, all percentages being expressed on a dry weight basis, to adjust the solid content to 30.0 % of the entirety.

Heating and agitation at a temperature of 68 °C for 30 minutes were conducted for sterilization in a pasteurizer. Soybean odor was eliminated, while protein modification was induced, leading to the exertion of the emulsifying effect.

Subsequently, filtration was carried out for homogenization (homogenize).

Then, the temperature was cooled from 68 °C to 5 °C over 5 minutes, for aging.

After final freezing, creamy ice creams were recovered.

The ice creams recovered at the aforementioned process had a taste and a flavor without any soybean odor as well as a smooth and creamy texture, like ice cream, irrespective of absolutely no use of any dairy products or chemical auxiliaries for food.

Owing to absolutely no use of dairy products or chemical auxiliaries such as emulsifiers, allergic reactions never occurred even in persons with milk allergy or in delicate health after ingestion of the resulting novel ice creams.

#### Industrial Applicability

In accordance with the invention, thus, novel ice creams

with a taste and a flavor with no soybean odor and with a smooth and creamy texture like ice cream can be recovered from the main raw materials soybean and potatoes, with no use of any dairy product or chemical food auxiliaries such as emulsifiers. Owing to the absolutely no use of dairy products or chemical auxiliaries such as emulsifiers, the resulting novel ice creams of the invention can be ingested even by persons with milk allergy or in delicate health, who could never taste ice cream. Additionally because of no use of rice, persons with rice allergy can ingest the novel ice creams of the invention.

As described above, because all the materials used are beneficial for human bodies, the smooth and creamy texture is comparable to the previous ice cream as a dairy product. Still further, nutritious elements never ingested from dairy products, for example lecithin, calcium, potassium, vitamin B1, vitamin B2, iron, protein and isoflavone can be ingested from the resulting ice creams, so the ice creams are suitable for the current health-conscious need.

### Claims

1. Ice creams containing as the main components soymilk and at least one species of potatoes.
2. Ice creams according to claim 1, where the ice creams have a composition of soymilk at 10 to 21 parts by weight, potatoes at 5 to 12.5 parts by weight and a sweetener at 50 to 70 parts by weight, provided that the total solid content in the ice creams is defined 100 parts by weight on a dry weight basis.
3. Ice creams according to claim 2, where at least one species of potatoes is sweet potato and the sweetener is oligosaccharide.
4. Ice creams according to claim 1, where the ice creams contain a component of at least one species of apple.
5. Ice creams according to claim 4, where the ice creams have a composition of soymilk at 10 to 21 parts by weight, sweet potato at 5 to 12.5 parts by weight, apple at one to 2 parts by weight and oligosaccharide at 20 to 40 parts by weight, provided that the total solid content in the ice creams is defined 100 parts by weight on a dry weight basis.
6. Ice creams according to claim 1, where the solid ice creams content occupies 25 % to 34 % of the total ice creams.
7. Ice creams according to claim 6, where the solid ice creams content occupies 28 % to 31 % of the total ice creams.
8. Ice creams according to claim 1, where an additive from

at least one species of fruit with sourness as a raw material is added.

9. Ice creams according to claim 1, where at least one additional mix material selected from beet granulated sugar, isomerized sugar, apple pectin, coral and vegetable oil is further mixed into soymilk and at least one species of potatoes.

10. Ice creams according to claim 1, where at least one species of antioxidants of vegetables or cereals and peptide or amino acid from fishes is added as a material to be added.

11. Ice creams according to claim 1, where momordicae fructus is added as the sweetener.

12. A method for producing ice creams including the steps of  
purifying soymilk by squeezing or filtering out soybean juice;  
kneading at least one species of potato powder into the solid of the soymilk, for thermal treatment;  
adding a sweetener and mix materials for heating and agitation, and  
subsequently cooling and freezing the resulting mixture.

13. A method for producing ice creams according to claim 12, where the method includes a step of boiling soybean until water slops over and cooking soybean in water containing electrolytes or in alcohol and water prior to a step of squeezing out soybean juice.

14. A method for producing ice creams according to claim 12,

where the method includes using sweet potato powder as at least one species of potato powder and using oligosaccharide as the sweetener.

15. A method for producing ice creams according to claim 14, where the method includes a step of additionally kneading at least one species of apple powder together with sweet potato powder into the solid of the soymilk.

16. A method for producing ice creams according to claim 15, where blend ratios to the total solid of the ice creams on a dry weight basis are 10 to 21 % of soymilk, 5 to 12.5 % of sweet potato powder, 1 to 2 % of apple powder, and 20 to 40 % of oligosaccharide.

17. A method for producing ice creams according to claim 14, where the heating and agitation after the addition of oligosaccharide as the sweetener is carried out to decompose the sugar chain to increase the quantity of dextrin until the molecules causing soybean odor are incorporated therein.

18. A method for producing ice creams according to claim 12, where an additive from at least one species of fruit with sourness as a raw material is further added at the step of purifying soymilk.

19. A method for producing ice creams according to claim 18, where the method includes adding an additive from at least one species of fruit with sourness as a raw material and subsequently heating the resulting mixture to induce protein

modification for emulsification.

20. A method for producing ice creams according to claim 12, where the method includes further mixing at least one selected from beet granulated sugar, isomerized sugar, apple pectin, coral and vegetable oil as a mix material.

21. A method for producing ice creams according to claim 12, where at least one species of antioxidants of vegetables or cereals, and peptide or amino acid from fishes is added as a material to be added, together with the mix material.

22. Ice creams according to claims 1 to 11, where milk at a volume according to the ice cream merchandise standards is used as a mix material.

23. A method for producing ice creams according to claims 12 to 21, where milk at a volume according to the ice cream merchandise standards is used as a mix material.



## Abstract

Ice creams having a creamy texture without any soybean odor like ice cream are provided by using soybean, without any use of dairy products or chemical auxiliaries, so the ice creams can be ingested by persons who cannot enjoy previous ice creams with addition of dairy products or chemical auxiliaries, due to the delicate health or milk allergy. Novel ice creams are provided, containing as the essential main components, soymilk and at least one species of potatoes. Use of at least one species of potatoes as one of the main components makes it possible to provide an ice cream product showing a smooth and creamy texture comparable to conventional ice creams and having no soybean odor.

Ref. \_\_\_\_\_

**COMBINED DECLARATION AND POWER OF ATTORNEY**

As a below named inventor, I hereby declare that

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

the specification of which: *(check one)*

**REGULAR OR DESIGN APPLICATION**

- ☐ is attached hereto.
- ☐ was filed on \_\_\_\_\_ as application Serial No. \_\_\_\_\_ and was amended on \_\_\_\_\_ (if applicable).

**PCT FILED APPLICATION ENTERING NATIONAL STAGE**

- ☒ was described and claimed in International application No. PCT/JP00/03263 filed on May 22, 2000 and as amended on \_\_\_\_\_ (if any).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56.

**PRIORITY CLAIM**

I hereby claim foreign priority benefits under 35 USC 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed.

**PRIOR FOREIGN APPLICATION(S)**

Country	Application Number	Date of Filing (day, month, year)	Priority Claimed
Japan	11-228067	11, 08, 1999	yes

*(Complete this part only if this is a continuing application.)*

I hereby claim the benefit under 35 USC 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of 35 USC 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37 Code of Federal Regulations §1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application:

(Application Serial No.)

(Filing Date)

(Status--patented, pending, abandoned)

## POWER OF ATTORNEY

The undersigned hereby authorizes the U.S. attorney or agent named herein to accept and follow instructions from Universal Patent Bureau as to any action to be taken in the Patent and Trademark Office regarding this application without direct communication between the U.S. attorney or agent and the undersigned. In the event of a change in the persons from whom instructions may be taken, the U.S. attorney or agent named herein will be so notified by the undersigned.

⑦ As a named inventor, I hereby appoint the following attorney(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith: Robert J. PATCH, Reg. No. 17,355, Andrew J. PATCH, Reg. No. 32,925, Robert F. HARGEST, Reg. No. 25,590, Benoît CASTEL, Reg. No. 35,041, Eric JENSEN, Reg. No. 37,855, Thomas W. PERKINS, Reg. No. 33,027, and Roland E. LONG, Jr., Reg. No. 41,949, c/o YOUNG & THOMPSON, Second Floor, 745 South 23rd Street, Arlington, Virginia 22202.

Address all telephone calls to Young & Thompson at 703/521-2297.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

-00 Full name of sole or first inventor: Hideharu TANAKA

(given name, family name)

Inventor's signature Hideharu Tanaka Date January 31, 2002

Residence: Shizuoka, Japan JPX Citizenship: Japanese

Post Office Address: 608-93, Higashino, Nagaizumi-cho, Sunto-gun Shizuoka  
411-0931, Japan

Full name of second joint inventor, if any:

(given name, family name)

Inventor's signature \_\_\_\_\_ Date \_\_\_\_\_

Residence: \_\_\_\_\_ Citizenship: \_\_\_\_\_

Post Office Address: \_\_\_\_\_

Full name of third joint inventor, if any:

(given name, family name)

Inventor's signature \_\_\_\_\_ Date \_\_\_\_\_

Residence: \_\_\_\_\_ Citizenship: \_\_\_\_\_

Post Office Address: \_\_\_\_\_

Form B

#5

**VERIFIED STATEMENT CLAIMING SMALL ENTITY STATUS**  
 (37 CFR 1.9(f) & 1.27(c))--SMALL BUSINESS CONCERN

 Docket Number (Optional)  
 PF-2623
Applicant or Patentes: Hideharu TANAKA

Serial or Patent No. \_\_\_\_\_

Filed or Issued: \_\_\_\_\_

 Title: Creamy Ice Cream Products Containing Soy-Milk and Potato as the Main Components and  
Process for Producing the same

I hereby declare that I am

- ☒ the owner of the small business concern identified below:  
☐ an official of the small business concern empowered to act on behalf of the concern identified below:

NAME OF SMALL BUSINESS CONCERN SUN HONEST CO., LTD.ADDRESS OF SMALL BUSINESS CONCERN 780-1, Matsunaga, Numazu-shi, Shizuoka 410-0874, Japan

I hereby declare that the above identified small business concern qualifies as a small business concern as defined in 13 CFR 121.12, and reproduced in 37 CFR 1.9(d), for purposes of paying reduced fees to the United States Patent and Trademark Office, in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons. For purposes of this statement, (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of the persons employed on a full-time, part-time or temporary basis during each of the pay periods of the fiscal year, and (2) concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both.

I hereby declare that rights under contract or law have been conveyed to and remain with the small business concern identified above with regard to the invention described in:

- ☒ the specification filed herewith with title as listed above.  
☐ the application identified above.  
☐ the patent identified above.

If the rights held by the above identified small business concern are not exclusive, each individual, concern or organization having rights in the invention must file separate verified statements averring to their status as small entities, and no rights to the invention are held by any person, other than the inventor, who would not qualify as an independent inventor under 37 CFR 1.9(c) if that person made the invention, or by any concern which would not qualify as a small business concern under 37 CFR 1.9(d), or a nonprofit organization under 37 CFR 1.9(e).

Each person, concern or organization having any rights in the invention is listed below:

- ☒ no such person, concern, or organization exists.  
☐ each such person, concern or organization is listed below.

Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27)

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

NAME OF PERSON SIGNING Hideharu TANAKA

TITLE OF PERSON IF OTHER THAN OWNER \_\_\_\_\_

ADDRESS OF PERSON SIGNING 608-93, Higashino, Nagaizumi-cho, Sunto-gun, Shizuoka 411-0931, JapanSIGNATURE Hideharu Tanaka DATE January 31, 2002